Amendments to the Claims:

Please amend claims 4, 11, 13, 14, 18, 21, 26, 28, 32, and 35, and cancel claims 10 and 15. Please add new claim 40. Following is a complete listing of the claims pending in the application, as amended:

1. (Original) A method for resizing an electronic image, comprising:

reading the electronic image from a memory as samples of image data, wherein the samples each include x-axis data and y-axis data;

using a first set of predetermined filter coefficients to configure a first filter to perform at least one operation on x-axis data of a plurality of samples, wherein the set of predetermined filter coefficients determine the at least one first operation performed, and wherein the at least first one operation is chosen from a group comprising decimation by a predetermined integer factor, low-pass filtering, and generating signal gradients;

receiving an output of the at least one first operation in a second filter;

using a second set of predetermined filter coefficients to configure the second filter to perform at least one second operation on y-axis data of the sample;

performing the at least one first operation and the at least one second operation on each sample of the electronic image data to produce a set of processed samples;

writing the set of processed samples to the memory;

reconfiguring the first and the second filter;

reading the set of processed samples from the memory;

performing the at least one first operation and the at least one second operation on each of the set of processed samples to produce a next set of processed samples;

repeating reading the set of processed samples, reconfiguring, and performing a predetermined number of times to produce a resized version of the electronic image.

2.   (Original) The method of claim 1, further comprising:

generating an x-axis cubic model using signal gradients output by the first filter;

generating an x-axis Δt value using a predetermined resampling ratio, a predetermined numerator, and a predetermined denominator;

evaluating the x-axis cubic model and the x-axis Δt value and outputting a resampled x value to a switch;

generating a y-axis cubic model using signal gradients output by the second filter;

generating a y-axis Δt value using a predetermined resampling ratio, a predetermined numerator, and a predetermined denominator; and

evaluating the y-axis cubic model and the y-axis Δt value and outputting a resampled y value to a switch.

3.   (Original) The method of claim 2, further comprising:

storing a low-pass filter output of the first filter in the switch;

storing a low-pass filter output of the second filter in the switch; and

configuring the switch to output one of the low-pass filter output of the first filter, the resampled x value, the low-pass filter output of the second filter, and the resampled y value.

4.   (Currently amended) The method of claim 1, wherein the at least one first operation and the at least one second operation are the same operation.

5.   (Original) The method of claim 1, wherein the first filter and the second filter each receive fifteen samples of image data at one time.

6.   (Original) The method of claim 1, wherein the at least one first operation comprises low-pass filtering and decimation by two performed by the first filter at one time.

7.   (Original)   The method of claim 1, wherein the at least one second operation comprises low-pass filtering and decimation by two performed by the second filter at one time.

8.   (Original)   The method of claim 1, wherein reading further comprises receiving the samples in a buffer and formatting the samples for the first filter.

9.   (Original) The method of claim 1, further comprising:
receiving the output of the at least one first operation in a clocked switch; and
clocking the clocked switch to transfer the output of the at least one first
operation to the second filter so as to coordinate processing of the x-axis
data and the y-axis data.

10.   (Cancelled)

11.   (Currently amended)   The method of claim ~~10~~14, wherein processing the image data comprises at least one pass, wherein at least one filter processes image data in one of the n dimensions, and wherein each of the at least one filters is independently configured for each pass.

12.   (Original) The method of claim 11, further comprising storing output from the at least one filter in a switch such that an output of the switch is selectable based upon an operation performed by the at least one filter.

13.   (Currently amended) The method of claim ~~10~~14, further comprising:
receiving the image data from a <u>second</u> memory;
formatting the image data into samples;
transmitting a set of samples to the filter in regular intervals; and
writing processed image data to the <u>second</u> memory so as to overwrite the
image data.

14.   (Currently amended)   ~~The method of claim 10, further comprising:~~A method of resizing an electronic image, wherein the electronic image includes image data in n dimensions, comprising:

storing instructions and data for resizing the electronic image in an external memory;~~and~~

executing the instructions in a predetermined order to control the circuit components to resize the electronic image, wherein the data comprises, the at least one set of coefficients, a resampling ratio, a numerator, and a denominator~~.~~;

calculating at least one set of coefficients for each of the n dimensions, wherein each of the at least one set of coefficients configure circuit components to process the image data independently in each of the n dimensions; and

processing the image data, wherein processing includes processing all of the image data once in one pass through the circuit during which the circuit has one configuration, and wherein at least one of the circuit components is a filter that is configurable to perform at least one operation during one pass, the at least one operation selected from a group comprising, decimation by an integer factor, low-pass filtering, and generating signal gradients.

15.   (Cancelled)

16.   (Original) The method of claim 14, further comprising generating cubic models using the signal gradients.

17.   (Original) The method of claim 16, further comprising:

using the resampling ratio, the numerator, and the denominator to generate a Δt value; and

using the Δt value to evaluate the cubic models.

18.   (Currently amended)   An apparatus for resizing an image that includes image data in multiple dimensions, the apparatus comprising:

a memory interface coupled to a memory that stores the image data; and

at least one filter, wherein each of the at least one filters processes data in ~~one~~ each of the multiple dimensions, the at least one filter being configurable to perform at least one of a group of operations during one pass of the image data, the group of operations comprising, decimation by two, low-pass filtering, and generating signal gradients for resampling, wherein the image data is processed in all dimensions in at least one pass and stored as processed image data in the memory.

19.   (Original) The apparatus of claim 18, further comprising at least one cubic model generator that receives a signal gradient output for a certain one of the multiple dimensions and generates a cubic model for the certain one of the multiple dimensions.

20.   (Original) The apparatus of claim 19, further comprising a ratio system for each of the multiple dimensions, wherein each of the ratio systems receives a predetermined resampling ratio comprising a numerator and a denominator, and generates a Δt value for resampling.

21.   (Currently amended)   The apparatus of claim 20, further comprising a cubic model evaluator for each of the ~~multiplt~~ multiple dimensions that receives the Δt value and the cubic model for one of the multiple dimensions, and generates a resample output for the certain one of the multiple dimensions.

22.   (Original) The apparatus of claim 21, further comprising a multiplexor that receives the resample output and a low-pass filter output of the at least one filter, wherein the multiplexor output is configurable based on an operation selected for a current pass.

23.   (Original) The apparatus of claim 18, further comprising an input buffer coupled to the memory interface, wherein the input buffer receives image data from the memory and formats the image data into samples for the at least one filter.

24.   (Original) The apparatus of claim 18, further comprising an output buffer coupled to the memory interface, wherein the output buffer receives processed image data and formats the processed image data to be stored in the memory.

25.   (Original) The apparatus of claim 18, wherein the at least one filter is a fifteen tap finite impulse response (FIR) filter, and wherein each tap receives a sample of the image data.

26.   (Currently amended) A system for resizing an image that includes image data in multiple dimensions, the system comprising:

    a main memory that stores the image data, configuration data, and control data;

    a memory interface coupled to the main memory that receives the image data, stores the image data, and formats the image data into samples;

    a resizing engine that performs different operations on the image data on different passes of the image data through the resizing engine, wherein the resizing engine is coupled to the memory interface to read formatted data from the main memory and to output processed image data back to the main memory, the resizing engine comprising a filter for each of the multiple dimensions, wherein the filter processes data in one of the ~~mutliple~~multiple dimensions, the filter being configurable to perform at least one of a group of operations during one pass, the group of operations comprising, decimation by an integer factor, low-pass filtering, and generating signal gradients; and

    a controlling processor coupled to the resizing engine that executes instructions to control the resizing engine, including instructions for calculating coefficients for configuring the resizing engine to perform different

operations on the image data, and instructions for configuring the resizing engine for each pass.

27. (Original) The system of claim 26, wherein the resizing engine further comprises a cubic model generator for each of the multiple dimensions that receives a signal gradient output from the filter and generates a cubic model for one of the multiple dimensions.

28. (Currently amended) The system of claim 27, wherein the resizing engine further comprises a ratio system for each of the multiple dimensions, that receives a predetermined resampling ratio for one of the multiple dimensions, and generates a Δt value for the certain one of the multiple dimensions.

29. (Original) The system of claim 28, wherein the resizing engine further comprises a cubic model evaluator for each of the multiple dimensions that receives a cubic model and a Δt value for one of the mulitple dimensions, and generates a resample output for the dimension.

30. (Original) The system of claim 29, wherein the resizing engine further comprises a multiplexor that receives the resample output and a low-pass output of the at least one filter, wherein a select input of the switch is configurable based on a current configuration of the at least one filter.

31. (Original) The system of claim 26, wherein the controlling processor controls the resizing engine to generate *b* output samples for each of *a* input samples, wherein the controlling processor further comprises:

a time accumulation circuit that indicates when to begin processing new samples from the memory interface, and when to configure the resizing engine to perform a different operation;

a correction circuit that causes the time accumulation circuit to correct for any accumulation errors from binary approximation; and

a controlling processor coupled to the resizing engine that executes instructions to control the resizing engine, including instructions for calculating coefficients for configuring the resizing engine to perform different operations on the image data, and instructions for configuring the resizing engine for each pass.

32. (Currently amended) An electromagnetic medium having stored thereon instructions, which when executed in an apparatus, cause the apparatus to resize an electronic image that includes image data in at least one dimension, wherein resizing comprises:

calculating at least one set of coefficients for each of the at least one dimensions, wherein each of the at least one set of coefficients configure circuit components to process the image data independently in each of the at least one dimensions; and

processing the image data, wherein processing includes processing all of the image data once in one pass through the circuit during which the circuit has one configuration, and wherein at least one of the circuit components is a filter that is configurable to perform at least one operation in all dimensions during one pass, the at least one operation selected from a group comprising, decimation by an integer factor, low-pass filtering, and generating signal gradients.

33. (Original) The electromagnetic medium of claim 32, wherein processing the image data comprises at least one pass, wherein at least one filter processes image data in one of the at least one dimensions, and wherein each of the at least one filters is independently configured for each pass.

34. (Original) The electromagnetic medium of claim 33, wherein resizing further comprises storing output from the at least one filter in a switch such that an output of the switch is selectable based upon an operation performed by the at least one filter.

35. (Currently amended) An apparatus for resizing an electronic image comprised of image data, the apparatus comprising:

a main memory read interface coupled to a main memory for receiving the image data;

an input buffer coupled to the main memory interface for formatting the image data received from the main memory interface;

a finite impulse response (FIR) filter coupled to the input buffer to receive samples of the image data to be processed, wherein the FIR filter performs at least one of a group of operations on the samples of image data in <u>all dimensions on each </u>pass through the image data, the group comprising, low-pass filtering, decimation by two, and differentiating to produce signal gradients; and

a processor coupled to the FIR filter, wherein the processor configures the FIR filter for each pass using predetermined filter coefficients.

36. (Original) The apparatus of claim 35, further comprising a cubic model generator coupled to the FIR filter to receive a signal gradient output.

37. (Original) The apparatus of claim 36, further comprising a cubic model evaluator coupled to the cubic model generator for evaluating a cubic model and generating a resample output.

38. (Original) The apparatus of claim 37, further comprising a ratio system coupled to the cubic model generator for generating a Δt value using a predetermined resampling ratio, a predetermined numerator, and a predetermined denominator, wherein the cubic model evaluator evaluates a cubic model using the Δt value.

39. (Original) The apparatus of claim 38, further comprising a multiplexor coupled to the cubic model evaluator for receiving the resample output, and coupled to the FIR filter for receiving a low-pass filtering output, wherein an output of the multiplexor is selected based upon a current configuration of the FIR filter.

40.   (New) A method of resizing an electronic image, wherein the electronic image includes image data in n dimensions, comprising:

      calculating at least one set of coefficients for each of the n dimensions, wherein each of the at least one set of coefficients configure circuit components to process the image data independently in each of the n dimensions; and

      processing the image data, wherein processing includes processing all of the n dimensions in each pass through the circuit during which the circuit has one configuration, and wherein at least one of the circuit components is a filter that is configurable to perform at least one operation in all dimensions during one pass, the at least one operation selected from a group comprising, decimation by an integer factor, low-pass filtering, and generating signal gradients.